



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,772	07/10/2003	Mickaele Le Ravalec-Dupin	612.42904X00	5959

20457 7590 12/11/2008  
ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-3873

EXAMINER
----------

SILVER, DAVID

ART UNIT	PAPER NUMBER
----------	--------------

2128

MAIL DATE	DELIVERY MODE
-----------	---------------

12/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/615,772

**Applicant(s)**

LE RAVALEC-DUPIN ET AL.

**Examiner**

DAVID SILVER

**Art Unit**

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

### DETAILED ACTION

1. The Instant Office Action is in response to a Request for Continued Examination filed 9/22/2008.
2. Claims 27-42 are currently pending in Instant Application.

#### *Priority*

3. Claim to priority have been acknowledged in previous Office Action (7/11/02).

#### *Response to Arguments*

#### *Response: 35 U.S.C. § 102 / 103*

4. Applicants' arguments are moot in view of new grounds of rejection, necessitated by amendment.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 27-28, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarda (**US 6064944**), and further in view of Huh (**US 20060020438**).

Sarda discloses: 27. (Currently Amended) A method for constructing a reservoir model representative of an underground reservoir, including discretizing said underground reservoir by a set of grid cells, and associating with said reservoir model a permeability field constrained by a priori geologic data and production data or pressure data obtained from well tests collected in said underground reservoir comprising (**Fig 1 and description; col: 8 line: 55-57**):

a) constructing an initial reservoir model including generating a permeability field in accordance with a stochastic model coherent with the a priori geologic data (**Abstract: "physically exploring the original reservoir based on the determined physical property"; col: 3 line: 12-15**);

Art Unit: 2128

Sarda however does not fully disclose the following limitations, which are disclosed by Huh's analogous simulation system.

b) identifying zones inside said underground reservoir (**Fig 2; para 41**);

c) calculating permeabilities of said zones (**para 41**),

using a simulator to simulate fluid flows for estimating simulated production data or simulated pressure data (**Fig 5A and description**), and

estimating corrections of said permeabilities for reducing a difference between said production data or pressure data obtained from well tests and said simulated production data or simulated pressure data (**para 104: "permeability-saturation relationship and dispersion level) were set to match the experimentally determined values"**);

d) propagating said corrections to said set of grid cells of said reservoir model by an iterative optimization process comprising minimizing a function which depends on said corrections, using a technique of gradual deformation of realizations of said stochastic model (**para 0009**); and

e) using said reservoir model, including said corrections propagated to said set of grid cells, to develop said underground reservoir (**col: 1 line: 11-13**).

It would have been obvious to one of ordinary skill in the art <oil reservoir modeling> at the time of Applicant's invention to combine the references in order to have a finer granularity for the grids / zones. Thus, allowing, for a better and more accurate simulation, which in turn saves time and money associated with developing a reservoir based on incorrect or inadequate simulation outputs.

Sarda discloses: 28. (Previously Presented) The method as claimed in claim 27, comprising using said reservoir model to develop an oil reservoir (**col: 1 line: 11-13**).

Huh discloses: 35. (Previously Presented) the method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones (**para 0009**).

As per claim 36, note the rejection of claim 35 above. The Instant Claim recites substantially same limitations as the above-rejected claim and is therefore rejected under same prior-art teachings.

6. Claims 29-34, and 37-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarda (**US**

**6064944**), and further in view of Huh (**US 20060020438**), as applied to claim 27, and further in view of Cullick (**US 6,549,879**).

As per claim 29, the combination of Sarda and Huh fully discloses claim 27. The combination however does not expressly disclose: A method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator, said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry and said zones are defined either manually or automatically from said flow simulator. Cullick however discloses the said feature (**col: 5 line: 33-39, col: 7 line: 40-51**). It would have been obvious to use the streamline simulation as it is significantly faster than traditional permeability simulations and thus saves time and costs associated therewith.

As per claim 30, the combination of Sarda and Huh fully discloses claim 27. The combination however does not expressly disclose: A method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator, said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry and said zones are defined either manually or automatically from said flow simulator. Cullick however discloses the said feature (**col: 5 line: 33-39, col: 7 line: 40-51**). It would have been obvious to use the streamline simulation as it is significantly faster than traditional permeability simulations and thus saves time and costs associated therewith.

Sarda discloses: 31. (Previously Presented) The method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir (**Abstract: "identifying a volume portion of the equivalent medium"**).

As per claims 32-34, note the rejection of claim 31 above. The Instant Claims recite substantially same limitations as the above-rejected claim and are therefore rejected under same prior-art teachings.

Huh discloses: 37. (Previously Presented) the method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones (**para 0009**).

As per claims 38-42, note the rejection of claim 39 above. The Instant Claims recite substantially same

Art Unit: 2128

limitations as the above-rejected claim and are therefore rejected under same prior-art teachings.

***Support for Amendments and Newly Added Claims***

Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

***Requests for Interview***

7. In accordance with 37 CFR 1.133(a)(3), requests for interview must be made in advance. Interview requests are to be made by telephone (571-272-8634) call or FAX (571-273-8634). Applicants must provide a detailed agenda as to what will be discussed (generic statement such as "discuss §102 rejection" or "discuss rejections of claims 1-3" may be denied interview). The detail agenda along with any proposed amendments is to be written on a PTOL-413A or a custom form and should be faxed (or emailed, subject to MPEP 713.01.I / MPEP 502.03) to the Examiner at least 3 days prior to the scheduled interview.
8. Interview requests submitted within amendments may be denied because the Examiner was not notified, in advance, of the Applicant Initiated Interview Request and due to time constraints may not be able to review the interview request to prior to the mailing of the next Office Action.

***Conclusion***

9. All claims are rejected.
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2128

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128

/DS/

David Silver, Patent Examiner  
Art Unit 2128